Fall 1993

REPORT OF THE

LAND VALUE SURVEYS WORKING GROUP

TO THE

NASS-ERS STEERING COMMITTEE

Contents

Introduction

This working group,[1] which was appointed by the NASS-ERS Steering Committee[2] was given four charges.

1. Review the full range of farmland value data collected within ERS and NASS and those known to be collected outside ERS and NASS.

2. Assess the quality of available data.

3. (a) Identify the extent to which each land value data series is unique. (b) Explain why or why not the characteristics of each are essential for the use(s) to which it is put.

4. Identify options for folding the multiple surveys into fewer surveys or into one data collection program.

The Working Group met several times alone and once with the Steering Committee. It collected considerable information on USDA and other surveys related to land values and discussed a wide range of issues related to each of the charges given by the Steering Committee. In particular, the Working Group reviewed the various land value surveys and resulting data and the extent to which each survey/series is unique, per charges, 1 and 3. It examined "why or why not the characteristics of each data series is essential to the use(s) to which it is put" (charge 3(b)). While the assessment of data quality (charge 2) was found to be more difficult and more subjective, some assessment of the several surveys was made. Finally, the matter of options available, including folding the multiple surveys into fewer surveys (charge 4), was addressed. In this process, we identified current and possible data sources that could serve as building blocks for options. Finally, we proposed a few options for consideration.

The chair of the Working Group, notes the high degree of interest by its members and is appreciative of their cooperation.

Rationale for and Task of the Working Group

The rationale for appointment of the Working Group included: Possible impacts of current and future budget limitations, the need for efficiency, possible overlap in existing surveys and data collections, some concerns about publishing more than one series on a given topic such as land values, and perceptions of data quality issues.

While the review concentrated on USDA land value surveys and data, it included information on related collections on rents, grazing fees, land transfers and other topics. Attention was also given to non-USDA surveys of significance.

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Planned Land and Global Resources Branch Review

The Working Group became aware of plans for an intensive internal review of the land values work of the Land and Global Resources Branch, RTD during FY'93. The NASS-ERS Steering Committee was so informed at the joint meeting. The Steering Committee recognized the potential value of that effort but suggested that the scope of the RTD review was narrower than the charge given to the Working Group.

The Working Group was to proceed with its review of the whole range of USDA land value surveys, as well as those conducted outside of the Department. The review was to consider the broad perspective and to avoid any parochial views such as might be held by agencies, divisions, branches, or individuals.

The need for Farm Real Estate Value Estimates

Land value estimates have a longstanding and important place in USDA statistics. Given the multiple uses for the data, the Department would likely be subject to substantial criticism if preparation of these estimates were to be discontinued. However, the Working Group saw the possibility of flexibility in the data sources from which the estimates are derived.

Two particular needs form the basis for ERS's current land value estimates. Probably the most widely recognized need is for data from which the official land value estimates of the Department can be produced. The second need is for data that will allow cost of production estimates and various financial analyses for the farm sector. ERS uses farm real estate value estimates in analyzing farm sector well-being and value estimates are essential in constructing the balance sheet of the farming sector. Data series related to farm real estate values, extent and methods of financing farmland purchases, and other aspects of the farmland market are also used by lending institutions, tax officials, and other government agencies. Individuals, such as brokers or lenders associated with farm real estate, use the data to adjust cash rental agreements and to aid in appraising farmland.

The level of and changes in farm real estate values have important implications for agriculture. The value of farmland and buildings accounts for more than 70 percent of the value of all farm assets. Thus changes in farmland values can substantially affect the wealth of the farm sector. Farmland serves as the principal collateral for the purchase of farm assets and for operating loans.

Difficulties in Land Valuation

Estimation of land values is an inherently difficult process. Because only 2 to 5 percent of U.S. farmland is sold in a given year, all farmland cannot be priced as is possible for goods that ordinarily pass through markets. Thus, estimates of land values have generally been based on opinions.

Farmland values reflect expectations about the stream of future net returns generated by agricultural production. But farmland values are affected by a host of factors, including agricultural productivity, prices paid and received, credit policies, Government farm programs, and technological change. Other variables such as taxes, interest rates, inflation, international currency rates, export policies, and urbanization all have important effects.

A complicating factor is the heterogeneity of farmland. Soils, topography, water supply, associated climatic conditions, distance to markets, and demand related to potential nonfarm uses, all affect value. Infrastructure, especially that concerned with transportation, is of considerable significance. Other factors affecting value are restrictions in use resulting from zoning, or laws concerning environmental issues such as maintenance of wetlands. Legal situations with respect to ownership

disputes may also play a role, as can air, water, or soil pollution. Intrafamily and other less than arms-length transactions are thought to impact values as reflected in sales prices.

In general, values have been most easily estimated and are seemingly of better quality in highly agricultural areas in which farming is mostly homogeneous and least affected by nonagricultural activities. Estimates for areas close to urban centers, where agriculture is often heterogenous and where values are more influenced by nonfarm demands for land, are more difficult. Remote areas, where arm's length sales are rare events and the market provides few signals, can also be problems.

Data for land valuation generally must be based on opinions about value or on actual transactions. Opinions about value have been the most common basis for the value estimates of USDA. Farm operators, for example, may be asked about the value of land they own or farm, or about land in their locality or county. Expert opinions are sometimes sought from lenders, brokers, appraisers, and others who are familiar with land markets. Opinions about value may be based on information about actual transactions involving similar property, although the process tends to be quite informal and inexact. There is an underlying assumption that only a small percentage of the land will be offered for sale. Appraisers generally utilize information from recent transactions along with estimates of expected returns from the land.

Because of the general infrequency of sales, great differences in the characteristics of individual tracts and the perception of different turnover rates among regions and between more urban and very rural settings, the collection of data on actual sales has not been widely used by USDA. The lack of consistent definitions and record keeping procedures for counties and other local political jurisdictions has likewise limited use of data from recordings of sales or from local tax appraisals.

Quality of Available Data: Some General Statements

For the statistician, two general measures of data quality are sampling and nonsampling errors. Sampling error arises from using a sample rather than a census to make inferences about the target population. Precision is the measure of sampling error associated with a survey. Precision measures how representative a sample is of the population from which it is drawn. Some factors influencing survey precision are sample size, survey design, and type of estimator. The measurement of sampling error is possible only with probability surveys, surveys where each sample unit has a positive and known probability of selection. Common measures of sampling errors are the coefficient of variation, standard error, and variance. These measures of precision can be calculated using survey results for most probability survey designs.

Nonsampling errors include all other types of survey errors. Examples of nonsampling errors are nonresponse, reporting and editing errors, incomplete coverage of the target population or duplication of members of the population, summary errors, and publication errors. Bias is the difference between the average survey estimates over all possible samples and the true (unknown) population value. Measurement of bias is usually difficult and cannot be done using only the survey results. The mean square error is a measure of sampling and nonsampling errors or an indication of overall survey reliability.

Because sampling error cannot be measured for the nonprobability land value surveys of USDA, less formal measures of quality are used. For example, data quality is sometimes questioned when estimated values for a state differ greatly from year-to-year without suggesting any recognizable pattern. The data may also be questioned when reported values are inconsistent with those for other

nearby states that have similar characteristics. Another informal test of quality or reasonableness is how consistent the data are with those from other surveys or sources.[3]

While the statistical properties of probability surveys are appealing, probability surveys are not necessarily more accurate than nonprobability surveys. However, the care required to design a probability survey and select the sample usually carries over to other phases of the survey, most notably data collection, editing, and summarization. Nevertheless a well-designed nonprobability survey can be the preferred approach in some situations. For example, probability surveys may not always be feasible or they may be excessively costly when compared to the available resources. Thus, the relative infrequency of farmland sales makes a probability survey of farm operators an unlikely choice for collection of farm sales data.

Background on Land Value and Related Estimates

USDA has historically published statistical series on farm real estate values, agricultural rents, and selected characteristics of farmland buyers and sellers. Some information about transactions has been published, but actual transactions have been used relatively little in estimating value. Farm real estate dollar values are published as per-acre averages for the 48 contiguous States and the United States. National figures are a summation of acre-weighted averages for the States. This weighing uses the most recent annual NASS estimate of land in farms.

The dollar-per-acre and cash rent estimates are released each year in the *Agricultural Resources: Situation and Outlook Summary*. These data are published, along with other data from the Agricultural Land Values Survey and market data from the Farm Land Market Survey in the ERS Situation and Outlook publication, *Agricultural Resources: Agricultural Land Values and Markets*. The data are also made available as standard data products. Research reports, statistical bulletins, staff analyses, and various responses to public requests are other uses. Grazing rates are published in *Agricultural Prices* by NASS.

The dollar value series consist of estimates of average value per acre of land and buildings, total value of land and buildings, value of farm buildings, and average value of land and buildings per farm. The value series are benchmarked on the census of agriculture and are updated annually by ERS.

The census of agriculture benchmark estimates of State average values are available every fifth year. ERS uses percentage changes derived mainly from the Agricultural Land Values Survey to move the benchmarks and provide the annual estimates of state average values. Because the dollar values rely on census estimates, which reflect the combined value of land and buildings, the ERS annual estimates also reflect the value of land and buildings.

The final State-average values published by USDA for the year following the census reference year are the same as the census estimates. Until data from each new census become available, the ERS preliminary estimates reflect the percentage change in dollar values based on USDA surveys. Then ERS changes the base for its dollar estimates of farmland value as the new census data become available. ERS also revises the estimates for each year following the preceding census to realign them with the new benchmark. To make these revisions, analysts use the relative year-to-year changes to interpolate between the two census estimates.

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[3]The use of nonprobability surveys and the lack of statistical measures of quality has possibly led to ERS's use of several land value surveys that can be compared to assess their reasonableness. Reasonableness in this case amounts to an informal quality assessment.

For selected States, ERS publishes three series on cash rents; "whole farms rented entirely for cash," "cropland rented for cash," and "pasture land rented for cash." These series are currently published for about half of the States, particularly in the eastern half of the country.

State average cash rents for irrigated and nonirrigated cropland and pasture land are estimated for many Plains and Western states. The State average cash rents are developed from the ALVS survey data and published. ERS also publishes a corresponding set of rent-to-value ratios.

Review of USDA Farmland Value Surveys and Data

ERS's official farmland value and related statistics are derived primarily from three surveys and the census of agriculture. The three surveys—the Agricultural Land Values Survey (ALVS), the Farmland Market Survey (FMS), and the Short-Interval Land Value Reporting Survey (SILVRS) are summarized below. Because it also obtains information about land values, the Working Group examined some aspects of the Farm Costs and Returns Survey (FCRS). However, statistics derived from the FCRS have not been directly used in preparing the official farmland value estimates. The FCRS data are used in Cost of Production estimates and various financial analyses. Besides these surveys, ERS also cooperates with and obtains annual land value estimates through the Agricultural Stabilization and Conservation Service county offices and our review included that source. For a brief summary of USDA land value surveys and data collections see table 1. A later section is concerned with the census of agriculture and other non-USDA data sources that are of interest.

Agricultural Land Values Survey

The Agricultural Land Values Survey is a nonprobability opinion survey of farm operators that is conducted by NASS for ERS each year. The annual surveys, when compared with preceding-year surveys provide estimates of annual percentage changes in farmland values for each of the 48 contiguous states. It is these percentage changes in value that are the "movers" applied to benchmark values reported from the most recent census of agriculture. The ALVS also serves as the source for ERS's state-level average cash rent estimates.

Respondents are asked to estimate average market values for cropland, pasture/grazing land, and woodland in farms in their county. Average cash rents are collected for entire farms (Eastern States), cropland, and pasture/grazing land. Several versions of the questionnaire allow for regional differences in farmland use and in leasing practices. For example, the value of irrigated cropland is collected in some states, but not in others. In most Western States, cash rents are collected for both irrigated and nonirrigated cropland.

NASS State Statistical Office (SSO's) are asked to review returned questionnaires. NASS sends a magnetic tape file of the unsummarized data to ERS for summarization, analysis, and publication.

Assessment of quality

Given its nonprobability design, formal procedures for assessing quality of the Agricultural Land Values Survey are lacking. However, even without formal measures of quality, efforts are made to minimize variability in the estimates from year-to-year and limit unexplained differences between adjacent states and regions. Considerable editing is necessary for some states. At the U.S. level, about 2.5 to 4 percent of the values were identified in 1992 as outliers and removed or edited to avoid publishing estimates that appeared inconsistent. The percentage varies among responses to individual questions. While this informal, often judgment-based, process is unsupported by statistical theory, it reduces what would otherwise seem to be unexplained changes in value from year-to-year and from

Table 1—Brief Summary of USDA Land Value Surveys and Data Collections

Survey, Cost and Who Collects	Frequency; Respondents	Statistical Character	Uniqueness	Other Data Elements	Strengths	Weaknesses	Objectives Met
Agricultural Land Values $250,000 NASS	Annual; Largely farm operators	Nonprobability; Sample 28,200 Completed 12,000	State-level percent change in values; State-level cash rents	Requets county value; Data by class of land, irrigated, non irrigated grazing, woodland	Sample flexibility; Panel until recently. State level	Population unclear; Difference from census questions; Low response; Quality needs strengthening.	Provides change data for state land value estimates but with considerable editing.
Farmland Market $75,000 NASS	Annual; Appraisers, real estate professionals, lenders	Nonprobability; Sample 6,800 Completed 2,000 with 5,800 sales	Transactions data on recent sales; price, principal use, buyer/seller categories, probable land use in 5 years	Requests county value for cropland, pasture, woodland Foreclosures and bankruptcies	Knowledgeable respondents; Relatively inexpensive	Question of how representative; Low response. Value estimates not directly useable.	Provides transactions data.
Short Interval Land Value Reporting Wisconsin Survey Research Lab $50,000	Quarterly; National panel of rural appraisers	Nonprobability; Panel of 413 in 1992	Quarterly; Information on change and expected change	Percent change in regional values	Knowledgeable respondents; Relatively inexpensive; panel	Relatively few respondents; Only 4 regions. No land use data. Panel size has decreased, but to be augmented in FY 1993.	Provides quarterly information on changes in values
ASCS County Office (No budget costs) ASCS	Annual; ASCS county staff	Census of county offices	County data; Near 100% response	Requests county value; Cropland Irrigated; Nonirrigated; Grazing land; Woodland; Cash rents	County data; High-interest by ASCS. Low cost	Not published at County-level. Knowledge level of respondents unknown.	Provides county estimates
Farm Costs and Returns (Approximately $5 million. Small part attributed to land values) NASS	Annual; Farm Operators	Multiple-Frame Probability; Personal enumeration; Sample 25,000 Completed 12,200	Integrated with other income and balance sheet data; Data by sales, type farm, type organization; Estimates relate to operator's farm Estimates of CV's	Dwelling values & Building values for this farm. Detailed whole farm data. Multi-purpose Specialty Farms targeted	Expansion to near population of farms; Well-documented procedures that correspond to Census; Personal enumeration.	Sample does not support State data; No data on land use (e.g. pasture, irrigation). Poor response	Provides detailed data for financial analysis

state-to-state. Publication of the current survey results without some review for reasonableness and subsequent adjustment would likely subject the ERS estimates to serious question. In fact, publication of estimates for the 48 States probably could not be continued.

Some of the techniques followed in past surveys appear to have been used to reduce variability in the value estimates. For example when the Agriculture Land Values Survey was redesigned in the early 1980's, the plan was to replace 20 percent of the list sample each year. Thus, the survey was originally to obtain data mostly from operators who responded in successive years. This panel-like feature was believed to reduce variability in the results. However, by 1992, the use of this procedure had been discarded. New samples were drawn without specific efforts to maintain the 80 percent sample overlap. The resulting increase in the sample replacement rate probably increased the variability in the survey result, but we have no evidence to document such an increase.

Nonsampling errors due to nonresponse and incomplete coverage of the target population are other concerns. In 1992, the U.S. sample totaled around 28,200, and nearly 15,100 questionnaires provided at least one value or cash rent estimate. Over 12,000 questionnaires were substantially complete. We do not know how this low response rate affected data quality or the extent to which it may introduce bias. However, we do know that results for some survey years were thought to be questionable for certain states and the state-level samples have sometimes been enhanced by NASS to allow improved estimates. Nevertheless, there is still reason for concern about the quality of the survey results, especially those for some individual states. In some cases, state estimates must be based on regional percentage changes. There have been earlier periods when estimates were not published for states for which they were believed to be unreliable. Current practice calls for complete coverage of the 48 states, despite the concerns noted above.

Some Working Group members expressed doubts about the ability of respondents to answer questions on values and rents for an entire county. For example, can respondents account for all types and sizes of farms? Might they substitute the value of their own farm or from a recent sale for the requested county value? Respondents have sometimes commented on difficulties in estimating a county average. At least some of the Working Group members believe that responses would be of higher quality if limited to an individual's operation. Another source of concern is the considerable range in the estimates of value even when the responses are compared for a single county. Beginning in 1993, respondents will again be asked to report for their locality rather than for their county as had been done before 1989. The change to the focus on county in 1989 had been made to allow use of acre weights from the census of agriculture.

A contrasting viewpoint, which probably explains the original adoption of the current approach, is that a request for locality or county estimates might be considered less sensitive by respondents. Another rationale sometimes used for county level rather than single farm estimates is the idea that estimates for a broader area would be less variable from year-to-year. Finally, there is a possibility that farmers may occasionally inflate values when asked to report for their own farms or underreport the value of their farm to disguise their net worth.

Both the census of agriculture and the Farm Costs and Returns Survey have values reported for individual farms.

Because the ERS land value estimates were derived from county level responses from the ALVS for 1989-92, but were benchmarked on census responses for individual farm operations, a question of consistency arises. While the difference in trends reflected by the two approaches may not be large, the inconsistency tends to lessen confidence in the resulting data.

In summary, we believe that results from the Agricultural Land Values Survey are stretched to their limit in reaching the goal of having satisfactory benchmark value movers for the 48 contiguous states. Most problem States are in the Northeast, Mountain and Pacific regions.

Uniqueness

As the work is now structured the Agricultural Land Values Survey uniquely serves as the source for the official estimates of land values and cash rents for each of the 48 states. Despite any shortcomings the ALVS may have, there is no other existing survey that can fill this need.

Farmland Market Survey

The Farmland Market Survey, which is a second, nonprobability data collection activity of USDA, is mailed to a list of about 6,800 real estate professionals, such as farm real estate brokers and agents, appraisers, and major agricultural lenders, including officials of the Farm Credit System, commercial banks, and the Farmers Home Administration. Questionnaires are sent to the entire list. NASS State offices compile and maintain the list. About 2,000 completed reports from the 1992 survey provided information on about 5,800 sales or transactions. NASS conducts the survey and provides the data to ERS. ERS analysts review the survey results and when necessary edit outliers.

The questionnaire asks for information on various characteristics of up to 5 voluntary and estate sales of farm, ranch, orchard, and grove property of 10 acres or more in the respondent's county during the last 4 months of the year. Respondents are to provide transaction details, including total sale price, total acres, amount of debt incurred, type of credit (if any), credit instrument (contract, mortgage), holders of primary and secondary liens, and interest rates on seller-financed transactions. Data collected include: tenure status of the buyer and seller, tenure of person(s) farming the land before and after sale, and probable use of the property 5 years hence. Also requested is the proportion of annual farm real estate transfers in the respondent's county that were voluntary, estate sales, family transfers, foreclosures, bankruptcies, condemnation sales, and other transfers. Respondents are also asked to estimate average values for cropland, pasture/grazing land, and woodland on farms in counties for which they have knowledge of values.

The transactions and transfer data are summarized in situation and outlook reports, used in staff analyses, and are helpful in responding to public requests.

Assessment of quality

The FMS lacks any formal means for assessing quality. Because sales may be seasonal and for other reasons, we do not know the representativeness of reported sales for the 4-month period. The currentness of State lists of farms, the percentage of farm real estate professionals that participate, and the percentage of total farm real estate sales actually reported are unknowns. Also, it is difficult to judge how the low response rate affects quality, but serious bias may exist in the results because of unlike response rates among different types of respondents. Because the land value estimates frequently do not correspond with value estimates from the ALVS, these survey results are not used in estimating State and U.S. farmland values. However, they provide check data for some States.

Uniqueness

The uniqueness of the Farmland Market Survey is its usefulness as a source of information on buyers and sellers and on various characteristics of farm real estate transactions other than price. The results are summarized for regions and the United States.

Short-Interval Land Value Reporting Survey

The Short-Interval Land Value Reporting Survey (SILVRS) obtains quarterly estimates and forecasts of percentage changes in U.S. and regional farmland values from a panel of more than 400 rural appraisers who belong to the American Society of Farm Managers and Rural appraisers. This panel was initiated in 1986 with three surveys per year. Its frequency was then increased to four per year. Efforts are made to offset attrition that has occurred in the panel. The Wisconsin Survey Research Laboratory at the University of Wisconsin uses computer assisted telephone interviews to collect the data for ERS. The panelists are also asked to provide their views of factors causing value changes.

Data from this panel survey provide quarterly intelligence on farmland values for use in staff analyses and responses to requests from the public. Results have been published in *Agricultural Resources: Agricultural Land Values and Markets, Farmland Value Update,* and are to be included in *RTD Update: Agricultural Land Values.*

Assessment of quality

As a panel survey of knowledgeable experts, the Short-Interval Land Value Reporting Survey provides more frequent than annual estimates that can be helpful in assessing trends in values There is no formal statistical procedure to assess the survey's quality, but the Wisconsin Survey, Research Laboratory is currently reviewing quality aspects of the data. The SILVRS has also provided an early indicator of changes in direction of land values. Indications are that it effectively meets these needs. In a general sense it should be possible to compare the trends suggested by this survey with those implied by the annual surveys. If the survey is to remain effective, we believe constant monitoring and updating of the panel will be essential.

Uniqueness

The Short-Interval Land Value Reporting survey's uniqueness is in its frequency and its structure. Among the various USDA surveys, it is the only source of quarterly data. If more frequent than annual data are essential, this survey has merit.

Farm Costs and Returns Survey

The Farm Costs and Returns Survey (FCRS) is a personally enumerated annual probability survey that provides data to support regional and national estimates of income and expenses, assets and liabilities, and other items associated with farming operations. The survey serves as the source of information for USDA's Costs of Production (COP) estimates. Among items of information collected is the respondent's opinion of the value of farmland and buildings on an individual farm operation basis. Data are also collected on purchases and sales of farmland by respondents. Data such as those needed for the estimates of cash rents published by ERS are not obtained.

The FCRS is a multiple frame survey using list frames for medium to large farms and area samples for smaller farms that are not on the list. The list frame is a simple stratified sample in all 48 contiguous states. The stratification includes groups of farms that are believed to be similar with respect to expenses or COP commodities. The area frame consists of certain June Agricultural Survey segments. The area sample stratification is based on expected land use in the 48 states. The sample for the FCRS has been around 25,000 for several years. Refusals, inaccessibles, nonfarm screen-outs, and area frame segments without farms reduced the number of completed questionnaires to 12,150 for the calendar year 1991 reference year.

NASS conducts the survey and the State Statistical Offices hand edit the questionnaire for reasonableness. Computer edits then follow specifications set by NASS and ERS. After this edit NASS summarizes the data to regional and national estimates of total expense. The summary procedures identify and adjust for outliers or reports considered to have an undue influence on the estimates. NASS supplies ERS with a tape file including edited data and expansion factors.

Each estimate has an associated coefficient of variation (CV). The CV for the value of land and buildings was 6.0 percent at the national level for the 1991 FCRS. CV's for the regions ranged for 4.1 to 9.4 percent, except for the Pacific Region where it was 29.2 percent. NASS also summarizes the data for value of sales, type of farm, and type of operating arrangement. CV's for the value of land and buildings for such items mostly ranged from 5–10 percent for the most recent survey. Based on the sampling errors calculated for the FCRS the estimates have been determined to be unsuitable for publication at the state level. The estimates are seen as reliable for major producing states.

Assessment of quality

Among USDA surveys that provide data on land values, only the Farm Costs and Returns Survey is a probability survey. Thus it is the only USDA survey including land values for which sampling errors can be estimated. Because the FCRS targets specialty farms it can more accurately weight such farms as they affect state and regional totals.

Data quality depends in part on coverage of the target population. As a multiple frame survey the FCRS provides more representative coverage than usual list frame surveys. The FCRS also targets specialty farms whose land values may be extreme. This allows such farms to be weighted more equitably in the summary data. However, the FCRS suffers from undercoverage of farms. Farm Sector Financial Analysis Branch reweighs survey averages using NASS estimates of farm numbers in an attempt to reduce the size of this problem.

The FCRS response rate is quite low. In fact, the sample size and response rates for the ALVS and the FCRS are quite similar. These low response rates, which result in nonsampling error, detract from the reliability of the estimates. Undercoverage of small farms by the FCRS has been a problem. There was concern that it could bias the estimates to the extent that values differ by size of farm. Efforts are underway to minimize this problem. Beginning with the calendar 1992 survey, the summary procedures are being revised to adjust for undercoverage by sales class. Also, the 1991 data are being resummarized to provide estimates that are consistent with those for 1992.

Given the difficulty of estimating land values by States, there is some question whether the FCRS could provide directly publishable land value estimates for the 48 contiguous States, even if substantially enhanced. Some judgement based process or "board" decision would likely be needed to avoid publishing state level estimates that appeared inconsistent from year-to-year and from state-to-state.

The FCRS asks respondents to report individual farm values rather than locality or county values. Some Working Group members believe that respondents may find such information easier to report accurately for their own operations than for a larger area.

Uniqueness

One unique feature of the FCRS is its use of formal statistical procedures that are well documented and that allow expansions to population values for which sampling error can be measured. Of course, nonsampling errors can also impact data quality, but they cannot be formally measured.

The second unique feature of the FCRS is its ability to provide much of the data from which ERS calculates costs and returns and farm income. Because the data can be associated with the full range of information about the farm business they also permit an assessment of farm business economic performance. The land value estimates are integrated with such estimates as variable costs, farm overhead, taxes and insurance, capital replacement and charges for operating capital, and unpaid labor.

Annual Survey of ASCS County Offices

In a cooperative effort with Agricultural Stabilization and Conservation Service, ERS annually obtains opinion estimates of land values and cash rents for essentially all U.S. counties—some 3,076 reports in 1992. Each county office completes a questionnaire.

ERS staff works with ASCS in questionnaire design and on the instructions. The ASCS's national office conducts the survey through their state offices. Completed questionnaires are reviewed by the ASCS state offices and by ASCS Area Directors. ERS also reviews the completed reports and attempts to identify and correct outliers by consultation with ASCS staff.

Items of data collected include county level estimates of average values of nonirrigated and irrigated cropland, grazing land, and woodland on farms. Cash rent data are collected for nonirrigated cropland, irrigated cropland, and grazing land. Beginning in 1991, county offices have provided estimates of percentages of cropland and grazing land rented, and on types of leasing arrangements used. Rented land estimates are provided on percentages cash rented and share rented, and on other arrangements.

Survey results are made available in an ERS/ASCS Administrative Letter. ASCS uses the county data for program analysis and implementation. ASCS has increasingly used the county data to review county cap bids established for the Conservation Reserve Program. County and state offices of ASCS are also believed to use the data. ERS analysts find the data useful for research and staff analyses.

Assessment of quality

The estimates provided by ASCS amount to a survey that includes all counties. Thus formal statistical means of assessing quality would be inappropriate. However, the county estimates when summarize to states are generally in line with ERS estimates from other surveys such as the ALVS.

While the survey seems to meet an objective of having county based estimates at very low cost, this survey is not seen as essential to the ERS program. ASCS might wish to continue the survey even without ERS involvement. A concern has been the possible deterioration of the objectivity of the survey as ASCS staff use the results for program purposes. ERS's involvement may help keep the survey more objective than it would be if conducted entirely by a program agency.

Uniqueness

This survey, which provides annual estimates of land values and cash rents by county, is the only survey that obtains county estimates between censuses of agriculture.

No money is transferred between agencies for conduct of the survey.

Review of Non-USDA Land Value Surveys

Besides the USDA surveys that have already been discussed there are several non-USDA sources of information that need to be considered. The most important of these are described below. A brief summary of these surveys is provided in table 2.

Census of Agriculture

The census of agriculture serves as the benchmark for USDA's land value estimates. Land value data are requested on a stratified sample of about one-fifth of all farms. Respondents are ask to give their best estimates of the current combined market value of the land, dwellings, barns and other buildings for all land in their farm operations. Respondents are also asked to report acreage of land rented from others and the amount of cash rent paid for land and building. Respondents separately report the estimated market value for owned land, land rented or leased from others, and land rented or leased to others. The Bureau publishes one composite value.

Respondents are instructed to estimate the value of land and buildings, assuming they were sold in the current market. Value is to be included for all land regardless of location or use. Cropland, pastureland, rangeland, woodland, idle land, house lots and other uses are included.

Assessment of quality

Besides the usual editing of obvious errors the Bureau of the Census makes estimates for whole farm nonresponse and imputes missing data. In the 1987 census, some 9.5 percent of the total value of farmland was contributed by whole farm nonresponse estimates. We also know that values were inputed for value of owned land on about 19 percent of farms with owned land and for about 28 percent of the value of rented land on farms renting land from others. These latter two estimates include the estimates for whole farm nonresponse.

During computer edit census performs item imputation for three categories of land values, when they are not reported. These are: value of owned land, value of land rented from others, and value of land rented to others. The value of owned land plus the value of land rented from others, minus the value of land rented to others, provides the value of land and buildings for the farm. Most imputations are generated using a per acre value for the land category (for example, owned land) from the nearest adjacent farm of the same Standard Industrial Classification (SIC) group and acre size range for which an acceptable value was reported. These values for adjacent farms are stratified by six SIC groups and three acre ranges within each SIC for each of the three land categories. Thus, there are 54 parameter cells for land value imputation for most farms. There are additional cropland stratifications for farms or ranches with 10,000 acres or more and there are value of sales stratifications for farms with wholly irrigated cropland in the 17 western states.

There has been criticism of editing out of certain high value reports by census staff. This has largely occurred in more urbanized areas where nonfarm uses greatly influence values. The Bureau has responded by indicating that less constraining edit limits will be used for the 1992 Census of Agriculture.

Census publishes relative standard errors for average value of land and buildings by States.

Table 2—Brief Summary of Non–USDA Land Value Surveys

Survey, Cost and Who Collects	Frequency; Respondents	Statistical Character	Uniqueness	Other Data Elements	Strengths	Weaknesses	Objectives Met
Census of Agriculture, Bureau of Census	5-year intervals. Farm operators.	Sample part of Questionnaire Mail survey	The most complete data on value available for acres operated	Acreage and production data, sales etc.	Value can be related to entire census farm data set.	Infrequent data. Considerable imputation necessary	Benchmark for ERS.
Federal Reserve Bank Costs unknown. Collected by Federal Reserve District Office Staff.	Generally Quarterly; Agricultural Bankers	Basically panels	Bank financial conditions and farmland values.	Change for cropland and pasture to: Dry cropland Irrigated cropland Ranchland	Quarterly data	Incomplete coverage of the country; Differences among the four FRB's make summary difficult.	Provides data to meet FRB's needs.
Farm Credit System (Could possibly be obtained for about $600,000). Appraisers compile	Date of sale; Ongoing data collection; country records	Compilation from country records in FCS Districts. Covers 60 percent of the U.S.	Transaction data on farm sales compiled from county records	Acres sales data, price, financing, etc. Some appraisers contact buyers and sellers.	Mostly limited to "arm's length sales."	$600,000 cost to ERS for annual data on 60% of the U.S.. Data and procedures differ.	Valuable for farmland appraisal. FCA sells data.
Land Value Surveys by state universities. Cost unknown	Variable but tends to be annual. Brokers, appraisers, lenders.	varies by state	State level estimates of values and rents	Varies by State	Detailed information for covered states.	Relatively few states covered.	Develop state & sub-state estimates for publications
Agricultural Economics and Land Ownership Survey. Bureau of Census	5 to 10 or more years as funding is available. Farm operators and landlords.	Stratified sample of census in scope returns. 44,000 sample 32,000 completed and processed. Mail survey.	Very detailed financial data Only source of landlord data.	Can be related to census data Land acquisition	Relatively large sample provides state level data. Landlord data.	Infrequent survey. Funding generally in question	Detailed financial and land ownership data.

Uniqueness

The uniqueness of the census of agriculture is in the very large number of reports and the representiveness of the sample on which it is based. It is thus the only source of data that can serve as a benchmark.

Federal Reserve Bank Surveys

Staff at four of the twelve Federal Reserve Banks conduct quarterly surveys of agricultural finance that include estimates of land values. These include the Federal Reserve Banks of Minneapolis, Chicago, Kansas City, and Dallas. These district surveys go to agricultural bankers. Results are published in quarterly FRB newsletters.

Assessment of quality

Each bank develops its own format. Coverage ranges from estimates of percentage changes in cropland and pasture over the past 12 months for the entire district (Minneapolis) to quarterly and annual percentage changes in dryland cropland, irrigated cropland, and ranchland for 15 regions within Texas (Dallas). Per acre values are also published.

Uniqueness

These surveys uniquely serve the originating banks. A major difficulty in these surveys is their incomplete coverage of the country and differences among the regions in approaches used. The data can be helpful in understanding the overall land market, but cannot be used directly in ERS's land value work.

Farm Credit System Transactions Data

The Farm Credit System compiles transactions data on farm sales from county records for use in appraising farmland as collateral for loans. The compilations are made by appraisers for each of the FCS District banks. The data on transactions include such items as date of sale, price, and financing terms. FCS appraisers in some Districts contact buyers and sellers for more detail. Recorded sales of farmland are believed to be limited to "arm's-length" transactions. Some Districts compile sales of 10 acres or more; others exclude sales of fewer than 80 acres.

Assessment of quality

The data compilation should generally be accurate, except for errors in tabulation. However, practices vary among District's so coverage and format also vary. The length of the files differs by District but none begin before 1987. Some District Banks have computerized files while others work with paper copies.

Appraisers in Districts use their judgment to desegregate total sales prices into estimated prices for various uses such as cropland, pasture, dwellings, and other farm buildings. We have no information on how well this process works.

Uniqueness

This data source is unique as a potential source of actual transactions data. In 1990, the FCS proposed providing the data for about 60 percent of the United States at a cost of $600,000 per year.

Land Value Surveys by State Universities

Surveys of various aspects of land markets are conducted for Alabama, Florida, Illinois, Indiana, Iowa, Minnesota, Nebraska, South Dakota, Texas, and Wyoming. Washington State University collects data for Washington, Oregon, Idaho, and Montana. These surveys are used to develop State and sub-state estimates of land values mainly within the individual states. Some of the surveys also collect rent data. The surveys are usually sponsored by departments of agricultural economics. The data are used for research and extension activities and more generally for public information.

Most of these states collect data that will allow estimates of value for cropland and pasture/grazing land. Coverage varies among states because of differing land-use patterns and regional or state terminology. For example, only the states of Alabama and Florida collect data and prepare estimates for "bare cropland." Indiana uses the term "bare tillable," but asks for detailed estimates in terms of top, average, poor, and transitional land. The surveys typically go to people considered to be knowledgeable about market conditions, including brokers, appraisers, and lenders. the results of these surveys are generally published as research or extension reports or in newsletters.

Assessment of quality

Although the quality of these state surveys may be suitable for the purposes for which they were designed, they cannot meet the broader range of USDA needs. Thus the surveys currently serve only as a source of corollary information.

Uniqueness

These surveys uniquely serve state and regional needs. They may provide information of interest to USDA analysts, but they do not satisfy the Department's Requirements.

Agricultural Economics and Land Ownership Survey (AELOS)

The 1988 AELOS was a mail survey of farm operators and landlords that was conducted as a follow-on to the 1987 Census of Agriculture. Data were collected using a broad range of financial and land related questions. Of particular interest for this review were questions that asked for acres and respondent opinions on the current market value of the owned, leased from others, and leased to others land and buildings. Questions were also included on rent paid and on acquisitions and sales of land. Sales values were requested for land that was sold. For land leased to others, both the market value and the value of rent received was requested, including cash, share, cash share, and other leasing arrangements. Besides value and rent estimates, the ALEOS questionnaires asked for other information about land transactions, including financing arrangements.

Assessment of quality

A sample of somewhat more than 44,000 was selected for the 1988 ALEOS. As followup, a thank you card was sent within a month of mailout and four additional followups were sent to nonrespondents to arrive at a final response rate for operators of 82 percent. About 32,300 reports with data were processed.

The published totals include inputed estimates for nonresponse. Extremely large operations that failed to respond were enumerated by phone or inputed during the enumeration period. Following clerical review, computer edits were used to check for consistency and reasonableness. Erroneous or inconsistent data were corrected and missing data were supplied based on similar reports within the same geographic area. Key items were compared with the 1987 Census of Agriculture. Problem items

and large entries were identified and reviewed by analysts. Farm operator and associated landlord data were reconciled to the extent possible for common data items.

No attempt was made to include farms that were too new to have responded to the 1987 census.

Uniqueness

Along with similar surveys, such as the 1979 Agricultural Finance Survey, the AELOS has served as a benchmark on the estimated value of dwellings and other structures. The AELOS and similar earlier surveys also provide the only U.S. -wide information on land holdings of farm landlords, including estimated value.

Because funds for conduct of such surveys have typically been unsure, this source of data should be viewed as uncertain.

The search for Options

The Working Group reviewed a broad range of surveys and potential data sources. From this review, we concluded that no one of these sources could meet the full set of data needs. We also decided that there are various ways in which these surveys and data sources might be combined as "building blocks" to arrive at useful options. An option, as we defined it, should supply the required data on each of the Department's identified data needs. We have provided our list of such needs and functions on table 3.

This building block approach is essentially the process used at present. We currently obtain different types of data from about seven surveys and assemble them to form a composite picture of farmland markets and allow needed financial analyses. Table 3 shows in rather abbreviated form what each of the present data sources adds to the picture. Thus by reading down the several columns of table 3, we can see that the census of agriculture provides farmer opinion data on current market values at 5-year intervals. ERS combines this census benchmark with annual farmer opinion data from the ALVS. The FMS provides some sales and professional opinion data on current market values, but the FMS is important mainly because it is the only source of information about characteristics of transactions. The quarterly SILVRS provides a more frequent than annual reading on how land values are changing. The ASCS county office survey data might be view as less essential, partly because it is not the sole source to meet any needs. However, it does provide internally useful information on county level farmland values. Finally, the FCRS uniquely serves as the source of land value data used for estimates of costs of production and financial analysis.

Besides table 3, we prepared three additional tables in the same general format showing data that might be obtained using different approaches: Professional opinions, farmer opinions, and farmland sales.

Professional Opinion Panels

Table 4 is concerned with data based on professional opinions. Three of the listed professional opinion surveys—FMS, SILVR, and the ASCS County Office Survey—have already been discussed. The one new proposal on this table was the creation of a new national panel made up of separately selected sub-panels of brokers, appraisers, lenders (including FmHA, FCA, and bankers), and possibly other knowledgeable professionals.

Table 3—Present Data Sources

Data Needs or Function Served	Census of Ag	ALVS	FIMS (Front page)	FIMS (in-side)	SILVR	ASCS	FCRS
Farmer opinion of current market value	X	X	O	O	O	X	X
Sales	O	O	O	X	O	O	O
Professional opinion of current market value	O	O	X	O	X (% change)	X	O
Value of farm buildings	O	O	O	O	O	O	X
Value dwellings	O	O	O	O	O	O	X
Land values by type of land use	O	X	X	O	O	X	O
Cash rents by type of land use	O	X	O	O	O	X	O
Transaction counts & characteristics of sales	O	O	O	X	O	O	O
Time period	5 year	Annual	Annual	Annual	Quarterly	Annual	Annual
Publication level:							
U.S.	X	X	O	X	X	X	X
Regional	X	X	O	X	X	X	X
State	X	X	O	O	O	X	Major
County	X	O	Internal use	O	O	Internal use	O
Measure of statistical reliability (Prob survey)	X	O	O	O	O	O	X
Other quality measure	O	O	O	Model needed	O	O	X
Provides farm financial analysis & characteristics	O	O	O	O	O	O	X
Timeliness or ease of collection	over 1 year delay	Good	Good	Data represent past	Good	Good	Fair
Cost	—	$250 Thou.	$75 Thou.		$50 Thou.	—	little attributable

X means that the survey or data source helps meet the listed need or function.
O means that the survey or data source makes little or no contribution to the listed need or function.

Table 4—Data Sources Based on Professional Opinions

Data Needs or Function Served	Combined separate panels of real estate professionals	Farm Land Market Survey (Front page)	Short Interval Land Value Reporting (Appraisers)	ASCS
Farmer opinion of current market value	O	O	O	O
Sales	O	O	O	O
Professional opinion of current market value	X	X	X (% change)	X
Value of farm buildings	O	O	O	O
Value dwellings	O	O	O	O
Land values by type of land use	X	X	O	X
Cash rents by type of land use	Some	X	O	Some
Transaction counts & characteristics of sales	O	O	O	O
Time period	Annual	Annual	Quarterly	Annual
Publication level:				
U.S.	X	X	X	X
Regional	X	X	X	X
State	Some	Some	O	X
County	O	O	O	O
Measure of statistical reliability (Probability survey)	O	O	O	O
Other quality measure	O	O	O	O
Provides farm financial analysis & characteristics	O	O	O	O
Timeliness or ease of collection	Good	Good	Good	Good

X means that the survey or data source helps meet the listed need or function.
O means that the survey or data source makes little or no contribution to the listed need or function.

The suggestion is to explore the feasibility of creating a multi-part national panel of real estate and credit professionals. From table 4, we can see that panels of professionals could very well add to the information available. Some Working Group members, and other we have talked with, believe rather strongly that professionals who work on real estate sales or farm lending on a day-to-day basis represent a more knowledgeable group than farm operators and could be quite helpful. The vision of this new panel is that it would be greatly strengthened from that used for the current Farmland Market Survey, and the panel would include several sub-panels similar to but not in the SILVRS. Respondents could estimate farmland values or changes in value. Given sufficient resources, more frequent than annual data collection could continue for some of the sub-panels. The survey results would be used to interpolate between census benchmarks.

The precision of results from a panel such as has been described would be difficult to quantify, but some informal checks on the quality of the estimates, could be made by comparing results from the several sub-panels. Some of the sub-panels might not be in position to estimate cash rents. Also, such a panel could not meet Departmental needs for financial data for individual farm operations.

We have insufficient evidence to provide a cost estimate, but given our experience with the SILVRS, costs would not be expected to be excessive. Considerable effort would be required in list building and maintenance.

Because this panel approach alone could not provide the full set of data needs, it should be considered as a building block to be used along with other approaches in designing a more complete option.

Farmer Opinion Surveys

The second general approach to obtaining estimates of land values and related information is to ask farm operators for their opinions. Farmer opinions have been the approach most commonly used to date, including the census of agriculture. Several potential sources of such data are listed on table 5.

Enhanced ALVS—One possibility for improving the farmer opinion data is to modify the Agricultural Land Values Survey (ALVS) to strengthen its statistical underpinnings for each State. The respondent's focus could be on the value of acres operated rather than on average value for a county or locality. The census of agriculture already asks for value of acres operated and this method was tested in the 1992 ALVS.

A probability-based survey design possibly sampling tracts of farmland along with or rather than names of operators could provide the basis for estimating sampling errors. Nonsampling errors would continue as unknowns, as they are in other surveys.

The 1992 ALVS response rates on a test of reporting for individual operations did not reflect any particular reluctance to report in this way. Respondents should also be knowledgeable about cash rents. Consistency with historical data series would be greater than with some of the other possible approaches.

ALVS re-cast as a panel—Within the Working Group there was some sentiment for returning the ALVS to a panel-like format. Estimates of changes in value developed from the panel estimates would be applied to the census benchmarks. The concept would be to replace around 20 percent of the operator panel each year. This would tend to reduce variability in the survey results and thus provide more publishable estimates. This was the approach used for the survey earlier and it has certain advantages. For example, there is agreement that it is statistically easier to estimate changes in value from a panel than to reestimate values from a newly drawn sample each year.

Table 5—Data Sources Based on Farmers Opinions

Data Needs or Function Served	Census of Ag	Enhanced ALVS	Recast ALVS as Panel	Integrated Sample ALVS-FCRS	Integrated + quarterly subsample	Enhanced FCRS	Census panel
Farmer opinion of current market value	X	X	X	X	X	X	X
Sales	O	O	O	O	O	O	O
Professional opinion of current market value	O	O	O	O	O	O	O
Value of farm buildings	O	O	O	X	X	X	O
Value dwellings	O	O	O	X	X	X	O
Land values by type of land use	O	X	X	X	X	O	O
Cash rents by type of land use	O	X	X	X	X	O	O
Transaction counts & characteristics of sales	O	O	O	O	O	O	O
Time period	5 year	Annual	Annual	Annual	Annual Quarterly	Annual	Annual
Publication level:							
U.S.	X	X	X	X	X	X	X
Regional	X	X	X	X	X	X	X
State	X	Most	Most	Most	Most	Most	O
County	X	O	O	O	O	O	O
Measure of statistical reliability (Probability survey)	X	O	O	X	X	X	X
Other quality measure	O	O	panel attrition	X	X	X	frame weakens
Provides farm financial analysis & characteristics	O	O	O	X	X	X	Some classifications
Timeliness or ease of collection	over 1 year delay	Good	Good	Fair	Fair	Fair	Unknown

X means that the survey or data source helps meet the listed need or function.
O means that the survey or data source makes little or no contribution to the listed need or function.

While panels are thought to have major advantages for some uses, they also must be drawn carefully if the responses are to be representative. Maintenance of panels to keep them up to date and to avoid excessive respondent burden is also essential.

Integrated sample ALVS and FCRS—The ALVS and the FCRS both collect data from samples of farm operators. The samples for the current surveys are essentially the same size and response rates are very similar. The sample for the ALVS and the list portion of the FCRS are both drawn from the NASS list of farms. By combining the resources, and possibly adding to them, there is the potential of a single stronger survey with this integrated sample. Farm operators would report on a probability basis. With the combined survey, the questionnaire would need to be expanded the include to full range of questions on values and rents now included in the ALVS. Operators would report for the land they operate. Reports would include the value of the operators' own land by type of land, including cropland, woodland, and pastureland. Irrigated land could be valued separately in states where appropriate. This approach would allow probability estimates in place of the nonprobability estimates that are currently available for the official USDA land value estimates.

Combining the ALVS with the FCRS samples would raise several significant issues: First, because the FCRS is near maximum length, a new separate version of the questionnaire would be needed. Second the FCRS does not support state level estimates of land value in all states. The Working Group is not in agreement on whether the combined ALVS and FCRS resources would be adequate to provide publishable estimates for all states. Thus, if land value and cash rent estimates for the 48 states were to continue with this approach the combined survey might need additional resources. We recommend pilot testing before this combined approach is permanently adopted.

Integrated ALVS and FCRS, plus a quarterly subsample—This alternative is identical to the preceding integrated approach, except that a quarterly sub-sample would be developed to allow more frequent than annual estimates. The quarterly sub-sample would operate as a panel drawn annually from the entire sample for the integrated survey.

Our preference is to maintain the flow of quarterly information about trends in land values. Having a survey that provides quarterly opinions on trends would be highly useful should the farm economy become depressed or should the land market overheat once again. Less frequent readings would provide some saving, but that implies greater risk for the Department in missing a significant shift or turnaround in farmland prices.

Enhanced Farm Costs and Returns Survey—This enhanced FCRS envisions two changes in the current FCRS data activity related to farmland values. First, additional samples would be added to the current FCRS sample with the goal of increasing the precision of state-level estimates of values for farmland, buildings, and dwellings. The additional samples would be targeted in states where statistical estimation of farmland values is particularly difficult. California, Florida, and the Mountain States are examples.

Second, the FCRS questionnaire would be enhanced to provide value and rent estimates by type of land use. Operators would be asked for value and cash rental rates of cropland, pasture, and other land in their operation.

Census Panel to update the census of agriculture—The census of agriculture serves as the benchmark for USDA's land value estimates. A nonprobability survey is now used by the Department to update these benchmarks from year-to-year. The possibility of using an annual panel drawn as a subsample of the census returns was suggested. This panel would essentially follow the same operators from one census to the next. Its goal would be to estimate annual changes to apply to the census benchmarks.

An advantage would be the possibility of tabulating the annual data by type of farm, value of sales, acreage, type of organization, etc.

The panel could be drawn as a probability sample, although as a panel it would loose some qualities of a probability survey and become less representative during the years between censuses. A new panel sample would be drawn after each census.

We suggest the possibility of having the Bureau of the Census use Computer Assisted Telephone Interviews (CATI) as a means of speeding responses and lessening delays in producing results. There is no apparent reason to believe that such a CATI survey could not easily match the present response rates.

This approach would move the locus of the annual land value survey from USDA to the Bureau of the Census and thus lessen USDA control. It would therefore be essential that the Bureau demonstrate that it could produce results on a quick turnaround basis. The Bureau has had experience with CATI and in conducting surveys for other Government agencies on a timely basis.

Because there has usually been a year or more delay in summarizing the census of agriculture, an issue to be resolved would be preparation of estimates for years in which there are censuses of agriculture. Continuation of the annual survey might be necessary, even in census years.

This survey would not provide data needed for cost and returns, income, and financial analyses.

Should NASS gain access to the census farm list through a change in laws governing disclosure as has been proposed, this type of survey could be conducted within USDA. We believe this change would strengthen the case for this general approach.

We have not explored costs of developing and surveying such a panel of operators.

Direct Collection of Market Prices Through Sales Data

While little used to date, there is considerable intuitive appeal to use of actual market prices as a measure of value. Price is the measure of value used for other goods.

A major issue in considering use of farmland prices is where and how the data will be collected. We know that actual sales of farmland are infrequent, around 2–5 percent per year. Thus, samples of farm operators are unlikely to be successful in collection of sales data. Other sources of sales data include those discussed below, and listed in table 6.

Farm credit system data—One of these is the Farm Credit System Data already discussed in some detail. Those data are compiled by District Banks from county records. While we believe their possible use should be explored further, we have concerns about differences in the county records and in procedures used by the several District Banks.

Enhanced farmland market survey—An enhanced Farmland Market Survey is another potential source of sales data. Given the close relationship of land brokers, lenders, and other real estate professionals with the market they can be quite knowledgeable.

County administrative records—A third approach which is also listed on table 6 is use of the recording of farmland sales by counties and other local governments. Such data are a matter of public record in many states. However, because of the large number of counties and significant differences in their land records, collection of such data can be extremely time consuming. To further complicate

Table 6—Data Sources Based on Sales Data

Data Needs or Function Served	County Administrative Records	Enhanced Farm Land Market Survey	Farm Credit System Data
Farmer opinion of current market value	O	O	O
Sales	X	X	X
Professional opinion of current market value	O	O	O
Value of farm buildings	O	O	O
Value dwellings	O	O	O
Land values by type of land use	O	O	O
Cash rents by type of land use	O	O	O
Transaction counts & characteristics of sales	Counts only	X	X
Time period	Annual	Annual	Annual
Publication level:			
U.S.	X	X	X
Regional	X	X	X
State	X	O	Some
County	O	O	O
Measure of statistical reliability (Probability survey)	O	O	O
Other quality measure	model needed	model needed	model needed
Provides farm financial analysis & characteristics	O	O	O
Timeliness or ease of collection	Data represent past, also lag while being compiled	Data represent past	Data represent past

X means that the survey or data source helps meet the listed need or function.
O means that the survey or data source makes little or no contribution to the listed need or function.

the collection of data on sales from local records, there are major differences in definitions of farmland among states and counties. There are also questions about how representative land sales data might be of all land.

While the Working Group has too little information at this time to form a consensus that would recommend reliance on collection of price data as a measure of value, we do recommend further exploration of this approach.

Options for Consideration

In deciding how to put together a set of options, we assumed that—

- The Department's estimates of farmland values will continue to be benchmarked on the census of agriculture.
- There will be continuing interest by the Department in annual land value and rent estimates for most if not all of the 48 contiguous states.
- The need for COP's estimates and data for financial analyses will continue.
- There is no inherent concern with having more than one source of data on land values, rents, and related topic.

The options listed below are not in any order agreed to by the Working Group. The steering Committee should recognize that no such agreement was reached. It is clear that the various members of the working group have preferences concerning approaches and sources of data. There are also unresolved issues about the potential effectiveness of the options in meeting USDA's data needs. As a Working Group, we see a need for pretesting before any option(s) is selected.

By establishing the set of building blocks as we have done the Working Group was able to select data sources that provide several viable options. Using these building blocks it was also possible to see in a general way what is gained or lost by adding or deleting one or more of the sources from a given option. We like this building block process and feel that it may be useful to the Steering Committee should it choose to go beyond the options we are suggesting.

Option A

This option would combine the following building blocks:

—Combined separate panels of real estate professionals (table 4, column 1)
—Integrated sample ALVS and FCRS, with a quarterly subsample (table 5, column 5)
—County administrative records (table 6, column 1)

Advantages

- Fulfills Department's needs and functions, especially the official estimates and the COP's and financial analysis data.

- Combined ALVS and FCRS would offer increased sample size for both land values and financial items.
- Only one sample of farmers would be questioned about land values.
- Allows increased focus on "problem" states and regions
- Provides for cross-check of professional opinions, farmer opinions, and actual sales.
- Formal measure of statistical reliability for data used for land values series.

Disadvantages

- These are all new, untested approaches.
- Not all of Working Group members agree that statistically reliable estimates can be provided for all 48 states.
- Efforts are needed to improve response rates.
- Publication of land value estimates will be slightly later than at present.

Option B

This option would generally follow present procedures, but it would include enhancements to some existing surveys:

—Enhanced ALVS (table 5, column 2)
—Transactions (sales) portion of FMS (table 3, column 4)
—SILVRS (table 3, column 5)
—Enhanced FCRS (table 5, column 6)

Advantage

- Easier to maintain series consistent with past.

Disadvantages

- No formal measure of statistical reliability for ALVS.
- Continues same general level of respondent burden.

Option C

This option would generally follow present procedures, but would include enhancements to some existing surveys and would conduct the ALVS as a panel:

—Re-cast ALVS as panel (table 5, column 3)
—Transactions (sales) portion of FMS (table 3, column 4)
—SILVR (table 3, column 5)
—Enhanced FCRS (table 5, column 6)

Advantage

- Panel approach may yield estimates that have less annual variance.

Disadvantages

- No formal measures of statistical reliability for ALVS.
- Continues same general level of respondent burden.